

ICT in the Workplace: Access for All or Digital Divide?

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Abstract

The paper presents the findings of research into the extent and impact of restricted access to ICT based communications for specific groups of staff in UK further and higher education organisations. Educational institutions disseminate key corporate information internally via email, intranets and Virtual Learning Environments. However, the extent to which access to electronic communications is available to *all* personnel within such institutions in the UK has not previously been established. The research arose from a concern that a significant proportion of staff were being routinely excluded from access, thus perpetuating and extending existing inequalities among personnel and creating a digital divide between the 'information rich' and the 'information poor'. A questionnaire survey was used to quantify the extent of restrictions on staff access across the sector, whilst case study research was used to conduct a qualitative analysis of its impact on individuals and institutions. The findings indicate that lack of hardware and network infrastructure pose less of a barrier to access than does lack of ICT skills, lack of motivation either to use computers or to gain ICT skills, and line manager resistance to staff using computers or accessing ICT training in work time. Job function was the factor most associated with lack of access, with cleaning, catering and estates staff least likely to have access. However, there were also examples identified of effective practice in extending the range of personnel with access and ensuring inclusive communication with all personnel. These insights into good practice should be transferable to a wide range of workplace contexts.

Introduction

Organisations across the world are relying increasingly on the use of Information and Communication Technologies (ICT) for the internal dissemination of key corporate information, whether this is via email, intranet, mobile technologies, or multimedia applications. This is certainly true of educational institutions in the UK, where the potential of Web 2.0 technologies to facilitate better information sharing is much talked about. However, despite this enthusiasm and the significant progress that is evident in the provision of network infrastructure and computer hardware across the sector, there has to date been a lack of research to investigate the inclusiveness of access by all categories of personnel to electronic information within individual institutions.

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This project was undertaken in response to concerns that a significant proportion of staff in UK further and higher education may be excluded from access to ICT in the workplace, and therefore from timely access to corporate information, whether as a result of their job function, their contract conditions (e.g. part-time or fixed-term working) or their geographical location. Whilst for some staff, access to ICT may not comprise a core component of their everyday work practice, a lack of access to key corporate and external sources of information in an increasingly 'virtual' work environment, risks perpetuating and extending inequalities among personnel, resulting in a divide between the 'information rich' and the 'information poor' (Norris, 2001; Feather, 2004). The research aimed to quantify the extent of existing restrictions on staff access across the sector, as well as to conduct a qualitative analysis of the impact of restrictions to access on individuals and institutions. In addition, it set out to identify examples of good practice being adopted by institutions in order to extend the range of personnel with access, and specific initiatives that have been implemented to ensure inclusive communication with all personnel irrespective of status, role or function.

A Twenty-First Century Self-perpetuating Digital Divide?

It is generally agreed that developed economies are increasingly dependent on information- and knowledge-based activities, rather than on the labour- and resource-intensive manufacturing industries of previous era. Castells (2000) describes the defining feature of the modern world as 'informationalism', with economic opportunity and social mobility premised on the ability to harness the potential benefits offered by new communications media. However, it is also recognised that a 'digital divide' persists, characterised by differential access to these media, both within and between nation states. This may be the result of lack of access to hardware and software, or of a lack of literacy, language or technical skills. It may also result from a perception of lack of relevance or usefulness of computer and network access, or of lack of relevant content on the Internet (Hellawell, 2001).

A key concern in the digital divide debate has been that this differential access to ICT risks reinforcing existing inequalities in social structures by exerting a disproportionate effect on those with low educational attainment and household income levels (Golding and Murdock, 2001; Murdock and Golding, 2001; Mossberger et al, 2003; Bozionelos, 2004). As work processes become increasingly automated – for example, it has been suggested that in the US around 50-60 % of 'low-skilled' jobs involve some computer use – non-users are deprived of the economic opportunity and job mobility that may be afforded to those with relevant ICT skills. As the availability of well-paid manufacturing jobs has eroded and the 'job for life' culture has disappeared, the same non-users are hampered by being unable to take advantage of online job-search opportunities or online learning opportunities, and may lack the social networks that lead to employment opportunities for those higher up the socio-economic scale. Furthermore, non-users face a potential 'democratic deficit' as the tools for civic participation, engagement and communication are increasingly available online (Mossberger et al, 2003; Norris, 2001). With regard to the 'skills deficit', research by Mossberger et al (*ibid.*) in the US confirms the assumption that the access and skills divide are inherently linked in a form of vicious circle: without access, potential users are unable to develop skills, and without skills, they are unable to benefit from access. This all points to the development of an unskilled underclass, that faces further marginalisation as basic IT skills become the essential passport to career advancement, personal development, learning opportunities, social networks, civic engagement and access to public information (Norris, 2001).

ICT in the Workplace

The importance of workplace internet access as a means of gaining familiarity with, and skills in using, new technologies has been highlighted by Norris (*ibid.*) whilst Bozionelos (2004) argues that such access can play a role in reducing psychological barriers towards computer use. The importance of enabling individuals to become skilled and confident ICT users is not purely a moral imperative: in an information- and knowledge-intensive economy, a well-educated and skilled workforce contributes to the stock of 'human capital' that is key to the competitive advantage of national economies (Edvinsson & Malone, 1997). Moreover, if we are to go beyond treating the symptoms of poverty and disadvantage, then it is essential to provide the 'second order' resources, such as education and training, that enable individuals to navigate a path out of deprivation (Servon, 2002).

ICT Access and Further and Higher Education in the UK

An initial review of the literature revealed that there had been little previous research specifically relating to ICT access in the tertiary education workplace in the UK. Where work on access to ICT in further or higher education does exist, the focus has tended towards accessibility in e-learning design for students and staff with disabilities (for example, see Phipps et al, 2005). Some statistical analyses of relevance have been undertaken: for example, with regard to the further education sector, it was reported in 2004 that 'access to ICT...for staff has reached target levels set by the National Learning Network (NLN)' (Becta, 2004). However, the target set related only to permanent members of teaching staff and fails to take into account contract teaching staff or other types of staff employed, thus omitting the very groups most likely to be marginalised in terms of access. Moreover, such statistics tend to focus narrowly on ratios of PC provision per member of staff, rather than exploring other potentially more significant barriers to access. The annual statistics provided by the Universities and Colleges Information Systems Association (UCISA), representing UK universities, higher education colleges, and a number of further education colleges, are also of some interest. The most recent available figures indicate that in 2005, provision for staff averaged 1.1 members of staff per work station (UCISA, 2006). This figure has remained relatively constant for the last eight years. The same data show that the average number of hours of IT training for staff has been decreasing in recent years: this may reflect the higher skills level possessed by staff in recent years on entry to the workplace. Alternatively, however, it may imply an assumption that IT training is no longer a priority, making it harder still for those who lack skills to overcome the deficit.

Methods adopted

The study adopted an exploratory research approach, combining a web-based questionnaire survey to collect primarily quantitative data, with six in-depth case studies. The questionnaire was distributed to all eligible institutions in the sector. With regard to the case studies, of those institutions that indicated a willingness to participate, three institutions were selected from the further education (FE) sector, and three from the higher education (HE) sector. For HE institutions, the selection strategy aimed to include at least one institution from each of the 'new' (i.e. post-1992) and the 'old' university sectors. Further selection criteria included ensuring a geographic distribution across each of the constituent countries of the UK. Within these parameters, institutions were selected according to the 'intrinsic interest' (Stake, 1995) of their questionnaire responses, and to a lesser extent by their accessibility to the research team. The combination of survey and case study methods enabled the collection of wide-scale quantitative data offering a broad and representative overview across the sector, as well as providing a richer, more qualitative perspective on specific issues within particular institutions.

The questionnaire was distributed electronically to a named individual in each of the 371 HEFCE-funded higher and further education institutions in the UK. Closed questions were used, although where appropriate an 'other' category was offered with an opportunity for respondents to elaborate on their answers. The questions probed:

- The existence of formal policy documents outlining principles of access to ICT-based communications within the organisation, and any policies with regard to the use of electronic communications media to disseminate corporate information;
- the extent to which there is dual hard copy provision of information otherwise disseminated electronically;
- the use of VLEs and other multimedia applications in learning and teaching activities in the institution;
- quantitative information on personnel without access or with restricted access, and their functions and status within the organisation;
- the provision of ICT training for personnel, and to which categories of staff such training is available;
- examples of current initiatives within the organisation that aim to extend access to all personnel, or to counter the negative impact of restricted or non-existent access.

The data were checked and categorised into further and higher education responses, prior to analysis by sector. The two sectors were then statistically compared to identify any significant differences between the two groups.

The three institutions selected as further education case study sites comprised:

- The Causeway Institute, Coleraine, Northern Ireland;
- Lauder College, Dunfermline, Scotland;
- Loughborough College, England.

With regard to the higher education sector, the selected institutions were:

- University of Wales, Bangor, Wales;
- University of Chichester, England;
- Loughborough University, England.

At each site, a series of semi-structured interviews was held with a range of personnel representing some or all of the following departments or functions:

- IT and Information Services (usually the Director or Chief Officer);
- Estates Department (where possible, both managerial and operational personnel);
- Equality and Diversity;
- E-learning.

Other staff interviewed at one or more case study sites included representatives from staff development and personnel departments, teaching staff and a trade union representative. From the initial questionnaire respondent, further interviewees were identified using the snowballing technique. The specific questions that were asked were guided both by responses to the initial questionnaire and by the interviewee's role and function. The overall themes explored, however, mirrored those investigated within the survey questionnaire.

In addition to the interviews, copies of relevant institutional documents and policies were analysed and, where possible, organisational intranets and portals were also examined.

Findings

Response rate

The questionnaire was distributed to 371 institutions in total. After some initial chasing, an overall response rate of 33 % was achieved, spread fairly evenly between the further (31 %, n=65) and the higher (35 %, n=56) education sectors. Of these, 25 further education institutions (FEIs) and 15 higher education institutions (HEIs) offered to participate further in the study by acting as case study sites. Responses were typically received from Heads of Information Technology or Information Services, Information Learning Technology / E-Learning Managers and Learning Resources Managers.

Formal policies governing the principles of communication and access to ICT

Communication

Fewer than half of the responding institutions had a stated policy or policies related to the means of internal dissemination of information. Interestingly, a significantly higher proportion of responding FEIs (51 %) gave a positive response to this question, compared to a significantly smaller proportion of HEIs (31 %). The study revealed a number of good examples of such policies, including the *Electronic Communication Policy* at Loughborough College (of which more later) and the *Internal Communication Policy* at the University of Chichester. The latter is interesting in its identification of the two-way responsibilities of staff towards communication: it enshrines the principle that staff have a duty not only with regard to information dissemination, but also with regard to keeping themselves informed: as the Director of Information Services asserted, “*Nobody has the right not to be communicated with!*”. At Lauder College the principle of using electronic communications media is encapsulated by an overall *ICT Pervasiveness Strategy* document, which has been instrumental in embedding the use of ICT as the primary means of communication across the College’s many geographically dispersed sites.

Access

Policies outlining the principles of access to ICT-based communications are more common in the responding institutions than communication policies. In further education, 68 % of respondents said they have a policy or policies within their institution, compared to 56 % of respondents in higher education.

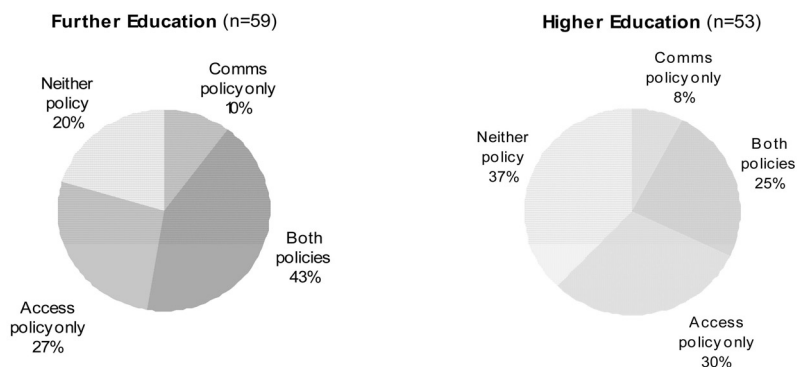


Figure 1: Proportion of responding institutions with formal policies.

Figure 1 illustrates the differences between the higher and further education sectors, and highlights that whilst the majority of institutions have one or both policies, a considerable proportion do not have in place formal policies relating to communication and access.

In those institutions without formal communication policies, a number of respondents, particularly those from further education, commented on their commitment to the use of electronic communication (principally email and intranet), as illustrated by such comments as:

“Although we do not have formal, published policies in this area, the arrangements are clearly understood by staff disseminating corporate information”.

“There is very much an email culture”.

Similarly, some respondents said that the principles of staff access to ICT are not formalised into a policy in their institution. For example:

“[HEI A] has principles in relation to electronic communication media, but these are not necessarily expressed in formal policies. For example, the decision to make “kiosk” PCs available, so that everyone could access the Web and email, was made at the highest level in the institution, but was not (to the best of my knowledge) formally expressed in policy terms.”

In a number of institutions where an access policy was in place, the focus of the policy seemed to be on compliance with acceptable use and security issues, rather than on access entitlement. This was particularly marked within further education. A higher education respondent commented:

“Policy formulation has concentrated over the past three years or so upon the highest priorities: i.e. regulatory compliance, information security and acceptable use. Having addressed these we are now turning our attention to information management and dissemination, firstly regarding email good practice, but we need to get to grips with information classification and electronic record /document content management. Without these, widening access to information could quickly become out of control.”

Policy dissemination

Of those responding institutions with formal communications policies, the intranet was found to be the primary means of making staff aware of the policy (71 % of further education respondents and 39 % of those in higher education). However, with regard to access policies, the primary means of apprising staff of the policy was by email in further education (50 %) and e-notices in higher education (61 %). These findings emphasise the reliance placed on electronic means of communication.

Non-electronic information dissemination

Around 80 % of institutions in both sectors provide on paper some (or all) of their electronically-available corporate documentation, and although this is often only on request, some institutions still rely heavily on paper as a means of ensuring information reaches all staff. As a higher education respondent said:

“We still very much have first line contact on corporate matters that are for everybody going out through the publications as stated above [fortnightly bulletins, council briefings] in print and we purposely make sure every type of staff member gets them”.

However, some institutions, such as Lauder College, were trying to move away from the use of hard copy altogether, in order to instigate better version control and to reduce the

environmental impact of whole scale document printing. Financial advantages to reducing the reliance on paper were also identified. Nevertheless, in spite of acknowledging the benefits of electronic information dissemination, institutions typically recognised the need to make alternative provision for those without computer access, or for those with specific requirements, for example as a result of visual impairment. Indeed, it was noted at Lauder College that the time saved by online document delivery can be used better to meet the needs of those with specific access difficulties. There was also a strong emphasis on the information dissemination responsibilities of line managers, to cascade information to their staff. Memos, staff meetings and briefings, and, to a lesser extent, newsletters, notice boards, handbooks and payslips were all cited as alternative means of information dissemination, and, at one (further education) case study site, posting notices on the fridge door in the staff room was seen as being a highly effective mechanism for reaching all staff! However, in some institutions a reliance on “*luck*” or “*the grapevine*” to achieve effective information dissemination to all staff, pointed to a lack of pro-activity in communicating with hard to reach groups.

Access for all?

The research indicated a general recognition of the need for all staff to have access to ICT, and found that the provision of computer hardware is generally adequate across both sectors, with desktop access being supplemented by the provision of loan laptops. In addition, staff are making increased use of their own computer facilities to work from home, facilitated by remote access to their institution’s resources. However, in practice, in the majority of institutions, not all occupational groups have equal access to ICT (Figure 2).

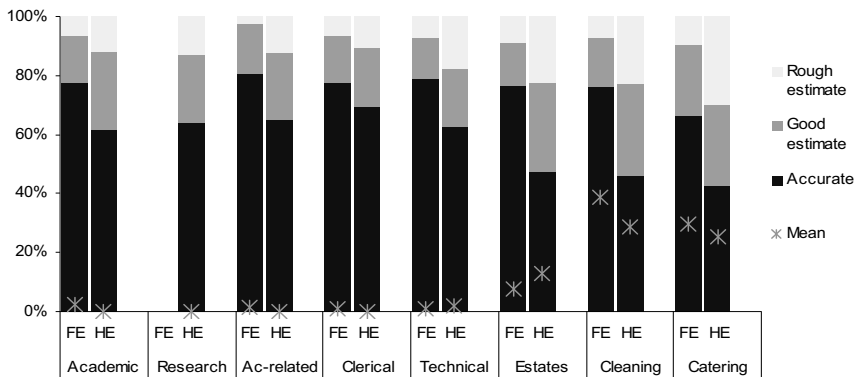


Figure 2: Staff without access to a computer.

Figure 2 illustrates, for each staff group, the average proportion of staff without access to a computer, together with an indication of the accuracy of the data. It confirms that cleaning, catering and estates staff are less likely to have access than other staff groups. In some cases, respondents said this was because cleaning and catering functions are outsourced – the implication being that it is the responsibility of the contractor to communicate with these staff. However, there may also be a perception, for example, that “*cleaners don’t need computers*,” as one FE respondent asserted. Whilst such views did not prevail, there did appear to be a distinction made between staff groups in terms of need, such that where access to networked computers was provided for these groups, they tended to be given the oldest and slowest machines, cascaded down from upgrading of the machines used by other groups. For

staff in the academic, research, academic-related, clerical and technical groups, some form of access was generally available, although, with the exception of estates and technical staff, staff in further education were less likely to have access than their counterparts in higher education. Importantly, Figure 2 also reveals a lack of accurate institutional knowledge about which staff do not have access to computers.

Availability of hardware aside, a number of respondents suggested that some groups of staff may not be motivated to use computers, even where they are available. For example, one respondent from higher education commented:

"All staff have access to shared PCs in the staff development room, though [in practice] this is exclusively used by academic and academic-related staff."

Conversely, the attitudes of those responsible for IT provision may also play a part in determining which staff have access. One further education respondent claimed: *"Only the Catering Manager requires access to IT."* However, there were also many examples of more positive attitudes and proactive initiatives to open up access to non-desk-based staff. For example, most institutions now have a policy of entitlement to a user account and email address for all staff, irrespective of job function. Nevertheless, whereas activation of user accounts tends to be automatic for other staff, non-desk-based staff in many institutions have to apply to activate their account and in practice do not always take up the opportunity.

Factors affecting staff access to ICT

Respondents were asked to consider which factors influence staff access to ICT within their institution. Table 1 indicates the relative importance of each of the factors within the two sectors.

Table 1. Factors affecting staff access to ICT, ranked and by sector.

Further Education		Higher Education	
Factor	% respondents (n=60)	Factor	% respondents (n=52)
1 Job function	68 %	<i>1 Job function</i>	87 %
2 <i>Geographical location</i>	38 %	2 Level of ICT skills	27 %
3 = Level of ICT skills	37 %	3 Geographical location	21 %
3 = <i>Type of contract</i>	37 %	4 Type of contract	19 %
5 <i>Financial constraints</i>	32 %	5 Financial constraints	15 %
6 <i>Status/seniority</i>	25 %	6 Status/seniority	13 %

Job function was found to be the most critical factor in determining whether or not an employee will have reasonable workplace access to ICT. As one further education respondent stated: *"Staff with no job requirement for access to ICT (e.g. cleaners) typically don't have access to ICT."*

Those factors in italics (Table 1) indicate where statistically significant differences emerged between the two sectors. Hence, job function was found to be more influential in higher education than further education. With regard to the impact of contract type on access to ICT, further education respondents frequently mentioned that part-time staff tend to share computers, particularly part-time or sessional teaching staff. Geographic location posed

particular access difficulties for teaching staff based in community or work-based locations, such as the prison service. In addition to the factors shown in Table 1, three further education respondents (5 %) cited physical building constraints or space as a limiting factor in their institution, while one higher education respondent said that sharing of offices or desks was a factor.

ICT skills and training

Although the majority of institutions make ICT training available to all staff groups, with 83 % of further and 74 % of higher education respondents reporting this to be the case, during interviews with staff lack of ICT skills emerged as a major barrier to ICT use. Where training is not made available to all groups it is generally staff in estates, catering or cleaning departments who are not offered such opportunities. However, the study highlighted that the provision of training does not necessarily ensure that staff have the skills or inclination to make effective use of ICT. The case studies found instances of manual staff being unaware of the training opportunities available to them. It was also reported that initiatives to extend ICT training to those in manual functions had met with low take-up and were therefore not considered viable. As one further education manager expressed:

“Catering people don’t seem to want them [computers] because even when supported and helped they do not use them.”

In some instances, the implementation of new computerised systems had acted as a driver for initiating ICT training for manual staff: examples of this were security staff responsible for operating new CCTV systems, and maintenance personnel required to use a new facilities management system. Furthermore, the increased use of intranets as document repositories, and the increased volume of information in circulation in institutions, had highlighted the need to support staff in developing information literacy skills – even where staff possessed adequate computer skills, they did not necessarily know how to locate relevant information on the corporate intranet.

The case study interviews indicated that the ICT skills levels of teaching personnel are also very variable, particularly in the further education sector, and this impedes the ability of institutions to implement innovative methods of learning and teaching or to take full advantage of their Virtual Learning Environment (VLE). Staff who had come to teaching from more practical craft-based professions, such as carpentry, did not always have previous experience of computer use and, in some cases, did not understand the relevance of such skills to the role of a lecturer or the part that technology can play in the classroom.

The attitude of line managers towards staff gaining ICT skills can be a critical factor in determining access: where such skills are not seen to contribute directly to the performance of work duties, line managers were often reluctant to allow such training to take place during work hours. Even where they recognised the benefits of their staff learning new skills, it was often difficult to release staff from covering essential duties. This was particularly the case with part-time staff and staff in functions where turnover tends to be high, making regular training provision a resource-intensive activity. Nevertheless, there were many examples of good practice with regard to the provision of ICT training, including targeted training initiatives for non-desk-based staff. Opportunities on offer at different institutions included informal IT drop-in sessions, a dedicated ICT training day and one-to-one training and support. Peer mentoring and ‘buddying’ is also being used in both a formal and informal manner. For example, at one case study site, the Senior Caretaker described how a younger, more IT-literate member of caretaking staff had been instrumental in helping his colleagues to

use ICT. Many institutions offer the possibility for staff to gain the ECDL qualification, and new staff induction is often used as a key opportunity for training interventions. As part of the induction process at Lauder College, for example, new staff are required to complete a questionnaire about their IT skills levels and to explain where the staff handbook can be found on the intranet: they must also sign to confirm that they have seen it.

The importance of leadership and the development of a culture of learning was highlighted by the case studies: at Lauder College, the former Principal was seen to have led by example by undertaking the ECDL qualification, and at Loughborough College the Principal was described as being “*very inspiring*” in encouraging staff to develop their ICT skills. This affirmative approach was illustrated by the College’s participation in a national project to facilitate training for staff who work unsociable hours. All cleaning staff had been offered basic skills training and had been paid for the time spent attending. According to interviewees, the cleaning staff had shown a “*thirst for learning*”: the encouragement and positive attitude of the cleaning supervisor was seen to have been instrumental in engendering this desire for training.

Initiatives to improve staff access to ICT

A total of 81 % of further education respondents said they currently had initiatives to improve staff access to ICT, compared to significantly fewer respondents from higher education (54 %). In fact, a degree of complacency was voiced by several higher education respondents, one of whom stated “*We are at optimum.*” Another commented:

“Access to ICT by all staff doesn’t seem to be an issue here – it’s not that some people might not like it who don’t have (much) of it, but from the institution’s point of view it has been a long time since I have heard that ‘x can’t get the sort of PC they need’ or ‘I never heard about that...’.”

This contrasted with the comment from one further education respondent, who said:

“I feel the lack of complaints about access within my institution indicates the need for greater staff training and I am about to put together a cross-college training scheme for both academic and support staff. I expect that the demand for physical access will then increase.”

In further education, initiatives predominantly featured the provision of staff training or making laptops available to staff, in particular to teaching staff. Other examples included:

- Wireless networking and provision of remote access,
- home computer purchase initiatives, including making redundant college PCs available for purchase,
- hot-desking,
- reviewing IT access in staff rooms,

In higher education, the focus was also on the provision of ICT training. Other initiatives included:

- Provision of PCs in shared areas, e.g. cyber cafes, ‘kiosk’ PCs, staff rooms, part-time staff labs,
- new posts covering information architecture (including the development of taxonomies and metadata) and records management, in order to make information more accessible,
- provision and loan of laptops in place of desktop PCs.

The case studies also offered some examples of good practice in extending access to all staff groups. At the Causeway Institute caretaking and catering staff had been provided with a dedicated computer for their use, although it was acknowledged that such staff were often apprehensive about computer use and relied instead on line managers to filter information down. At Lauder College the implementation of a computer-based facilities management system had led to recognition that facilities staff need access (for example, in order to obtain their daily task list), and therefore issues of whether computer use is a valid use of their time simply did not arise.

The University of Chichester has made a focused effort to ensure that information is disseminated effectively to professional and manual staff. Manual staff have access to ICT training, and to a shared computer facility attached to a workshop for the use of maintenance, grounds and security staff. However, only about one third of these staff have made use of it, and therefore information is still printed out for distribution either to individuals or via a notice board. Contracted catering and cleaning staff do not have access, so managers are responsible for disseminating important information verbally or in hard copy.

At Loughborough University, the devolvement of funding for computers to departments was recognised as having the potential to act as a constraint for departments where computer use is not a core feature of the job. This had been resolved to some extent by making redundant computers from other departments available to them free of charge. The University had also embarked on a Home Computing Initiative with a salary surrender scheme in exchange for home computer equipment, but taxation changes had led to this being abandoned. Manual personnel such as security staff, cleaners and maintenance staff, are the group that are least likely to have ready access to a computer at the University. Although shared access to a networked computer is available to estates staff in their canteen, this usually limits staff to using it in their break time. Supervisors of manual staff will usually have access to their own computer. According to the cleaning supervisor who was interviewed, access to a computer and to email has made her more effective in her role. She uses email to report jobs to the estates help desk, and receives an almost instantaneous response with a requisition number that lets her know that the job has been logged. She also commented that she is able to access information more quickly using the intranet and her paperwork has been significantly reduced.

All new staff at the University are offered ICT training as part of their induction: finding information on the Web (and who to ask if you cannot find it) is included in this training. However, induction is not mandatory and not everyone attends. The University recognised that lack of access to computers might be less of a barrier for some staff than was posed by their lack of ICT skills and a lack of knowledge of where to find this information. In response to recognition that residential and estates staff were often disadvantaged in this way, the University had organised an *IT Awareness Week* in 2004 specifically for these staff. This included guidance on the availability of resources, hands-on training on internet and email use, and a guide to further training opportunities. The University was provided with two Learn Direct computers for the training: these still remain in the estates' staff canteen for shared use. Managers had been generally supportive of staff undertaking the training in work time. A spin-off from this initiative has been the provision of evening classes for University estates staff at a local Community College. However, it was acknowledged that some staff are not interested or motivated to develop their skills and the cleaning supervisor suggested that some staff are still fearful of computers: she had felt the same a few years ago, but "*the more you use them the more confidence you gain.*"

The dispersed nature of the estate of the University of Wales, Bangor (it has around 27 sites scattered across the city of Bangor, plus other satellite sites such as that in Wrexham) was acknowledged to pose logistical difficulties in the maintenance of good communication across the University, particularly with regard to staff in the Estates Department. Security and cleaning supervisors have access to a shared computer, but estates staff other than supervisors and managers do not have any dedicated access. Although there are open access computers available for use by all University staff in central areas such as Learning Resources Centres, geographical distance and lack of time combine to act as barriers to use. Focus groups had been held with these staff and they had expressed a need to have access to ICT. As a result, a plan had been formulated to make older machines available specifically to estates staff in various locations across the premises (*"after blocking the games on them"*). However, this plan had met with resistance and was never fully implemented. Operational managers were opposed on a number of grounds: these included concerns that staff would *"look at dodgy websites"*; the implications for training needs; and whether there was any purpose in the initiative (*"should cleaners have computers?"*). Some managers had been more enlightened, and interviewees reported that there has since been a cultural shift, particularly as new systems are requiring staff in all areas to be computer literate and to have access to ICT.

Discussion and conclusions

The initial literature review suggested that workplace access to ICT within the further and higher education sector in the UK and elsewhere has been a relatively ignored and unexplored area. Within the UK, the primary research found evidence of a broad recognition at institutional level of the value of extending ICT access to all personnel. In 71 % of institutions responding to the survey, this recognition has been incorporated within formal policy statements governing the principles of staff access to ICT and/or corporate information dissemination. This has been driven partly by an increased computerisation of routine processes such as maintenance request reporting, events booking, purchasing and procurement, requiring increased computer use on the part of previously excluded groups such as those in non-desk-based functions. Staff in manual roles, such as cleaning and catering, that are employed by sub-contractors, appear to be the only group who are routinely excluded from entitlement to an institutional user account. On the whole, the provision of computer hardware and network infrastructure is seen as adequate, with a consensus that staff who need access to a computer to do their job generally have such access. For staff who are not employed on a contracted-out basis, job function was the most commonly cited factor impacting on access to ICT, with those in manual roles less likely than other personnel to have access. And, although institutions are making increased provision for such staff, they are often provided with the oldest and slowest computers, a factor likely to act as a deterrent to those who are already reluctant to embrace ICT.

There was also evidence of a broad recognition of the importance of all staff possessing basic ICT skills, and indeed, the majority of reported initiatives to improve staff access focussed on the provision of ICT training. There were a number of examples of innovative and proactive approaches in offering training specifically targeted towards personnel in non-desk-based roles. It seems that the real dilemma with regard to such staff lies in winning over their 'hearts and minds', as well as those of their immediate line managers. Not all staff are motivated towards learning to use computers. This appears to be in part due to a fear factor, especially with regard to older personnel, but may also be the result of a lack of awareness of the potential benefits on offer. Interestingly, this had led in some instances to a significant shift of power away from older, more senior personnel, towards younger, junior personnel, as illustrated by the example of the Senior Caretaker at the Causeway Institute, who was now

reliant on his young junior to navigate the computer system and to execute many of the functions that would previously have fallen to him. Some operational managers did not recognise a need for their staff to possess ICT skills or to have access to ICT, and in some instances expressed fear that staff could not be trusted to make responsible use of such facilities. This sort of attitude may become less prevalent as younger staff, who have grown up with computer use as an integral part of daily life, are appointed into supervisory and managerial positions.

The further education sector faces some particular dilemmas with regard to access to ICT, resulting from a combination of increased reliance on the use of electronic delivery and support of teaching and learning, together with large numbers of part-time sessional staff and community- or work-based staff. Such staff were found to be significantly less likely to be provided with a computer for their individual use, and in some cases had no access to ICT in their workplace. In the long term, such difficulties may be overcome by technologies such as wireless access combined with mobile devices such as laptops, although cost is currently a barrier to this solution in some institutions. Home access can also overcome some of these difficulties, although this raised concerns with regard to work-home boundaries for some staff. The reluctance (or inability) of institutions to pay for time spent by such staff on ICT training is another significant barrier to access.

However, there were also many examples of good practice found in participating institutions. The findings indicate that the primary concern for institutions to address is one of access to *information* rather than of access to *computers*. The research highlighted the difference between the relatively passive function of information *provision*, and the more proactive nature of information *communication*. Ensuring that relevant information reaches its destination and is read and understood is not simply a matter of putting a document on an intranet or sending an email. Thus it is proposed that a focus on communication strategies and their fitness for purpose, alongside a proactive and inclusive approach to facilitating access to ICT, would resolve many of the issues raised by the research.

Limitations and further research

The research has drawn attention to the importance of institutions having a formal policy governing communication strategies and access to ICT. However, the scope of the study did not allow in-depth analysis of the content of such policies where they do exist. The sector would benefit from guidelines with regard to the potential content of such policies in order to assist those responsible for their formulation. The research was limited by the six month period available for the investigation. It therefore provides only a 'snapshot' of the situation current at the time of data collection (May-August 2006), rather than a longitudinal insight into developments in access over time. There was evidence of many ongoing initiatives to improve access, and the dynamic environment in which institutions are operating suggest that staff access to ICT is likely to continue to evolve. Therefore it would be useful to build on the current study with further more extensive and in-depth investigation in the future.

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